

## CLAIMS

1. A conductive component for an electrochemical cell comprising a metal part having a doped coating in the form of at least one of a doped diamond coating and a doped diamond-like carbon coating.
2. A component in accordance with claim 1, said doped coating being doped with foreign atoms comprising one of foreign atoms of the main groups of the periodic table of elements, foreign atoms of the side groups of the periodic table of elements and foreign atoms belonging to the rare earths  
5 of the periodic table of elements.
3. A component in accordance with claim 1, said doped coating being doped with at least one of the elements Ti, W, Au.
4. A component in accordance with claim 1, said doped coating being doped with at least one of the elements B, Sc, Y, Nb, V, Fe, Cr, Ni, Mn, Zr, Mo, Ta, Hf, Pt, Pd, Re, Ru, Rh, Ir, Ag.
5. A component in accordance with claim 3, said doped coating having between more than 0% and 35% foreign atoms.
6. A component in accordance with claim 3, said doped coating having between 10 and 20% foreign atoms.
7. A component in accordance with claim 4, said doped coating having between more than 0% and 35% foreign atoms.
8. A component in accordance with claim 4, said doped coating having between 10 and 20% foreign atoms.

9. A component in accordance with claim 1, said doped coating having a layer thickness above 0  $\mu\text{m}$  and below 10  $\mu\text{m}$ .

10. A component in accordance with claim 1, said doped coating having a layer thickness in the range from 1 nm to 150 nm.

11. A component in accordance with claim 1, said metal part being formed of a metal selected from the group comprising titanium, stainless steel, steel, steel with no additional alloying element, aluminum, magnesium and an alloy of any of the foregoing.

12. A component in accordance with claim 1 in the form of a bipolar plate of a fuel cell.

13. A method for the manufacture of a conductive component comprising a metal part having a doped coating in the form of at least one of a doped diamond coating and a doped diamond-like carbon coating, wherein said coating is produced by at least one of a CVD and/or a PVD process.

14. A method in accordance with claim 13, wherein said process at least includes a CVD process carried out with plasma assistance.

15. A method in accordance with claim 13, wherein said process at least includes a PVD process carried out with plasma assistance.

16. A method in accordance with claim 13, wherein said at least one process involves the use of at least one reactive gas including carbon as a component thereof for the deposition of said coating.

17. A method in accordance with claim 16, said carbon for said doped coating being available in full by said at least one reactive gas.

18. A method in accordance with claim 13, said method comprising the step of providing a dopant for said doped coating as a component of said at least one process.

19. A method in accordance with claim 18, said dopant being made available as a component of said at least one reactive gas used to form said doped coating.

20. A method in accordance with claim 18 and comprising the step of providing said dopant from a target material comprising said dopant by releasing said dopant from said target material during a PVD process.

21. A method in accordance with claim 13, said at least one process being carried out in a reaction chamber at a pressure of 0.1 to 50000 Pa in said reaction chamber.

22. Use of a component in accordance with claim 1 in an electrochemical cell.

23. Use of a component in accordance with claim 1 as a bipolar plate in a fuel cell.

24. Use of a component in accordance with claim 1 as a bipolar plate in a fuel cell selected from one of the following kinds of fuel cells: PEMFC (Proton Exchange Membrane), DMFC (Direct Methanol Fuel Cell), SOFC (Solid Oxide Fuel Cell), MCFC (Molten Carbide Fuel Cell),  
5 PAFC (Phosphoric Acid Fuel Cell) and AFC (Alkaline Fuel Cell).

25. A coating of a metal part for an electrochemical cell, said coating comprising at least one of a doped diamond coating and a doped diamond-like carbon coating.

26. A coating in accordance with claim 25, said doped coating being doped with at least one element selected from the group comprising: Ti, W, Au, B, Sc, Y, Nb, V, Fe, Cr, Ni, Mn, Zr, Mo, Ta, Hf, Pt, Pd, Re, Ru, Rh, Ir, Ag.

27. A coating in accordance with claim 25 when provided on a bipolar plate for a fuel cell.